

Highlights

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- * ATOMIC POWER COSTS
- * SPACE RESEARCH PATENTS
- * RADIATION HAZARDS
- * SCIENCE MEETINGS
- * SCHOOL SCIENCE EQUIPMENT
- * NEW BOMBING COMPUTER
- * GLAZING MATERIAL RESEARCH
- * PUBLICATION CHECKLIST

Washington SCIENCE TRENDS

ATOMIC POWER COSTS

Costs for many government and civilian atomic power projects are soaring well beyond original expectations. Anticipated outlays for some plants have doubled. A new report to Congress underscores this trend and will be used to back up pleas for additional Governmental support.

Here are up-to-date cost figures on some of the projects which are proving to be far more expensive than original estimates. The cost of related research and development and operating costs are not included:

* Pressurized Water Reactor (PWR) at Shippingport, Pa. Original estimate for plant and turbine generator -- \$47,750,000. New estimate -- \$73,577,000.

* Sodium graphite reactor (SRE), Santa Susana, Calif. Original estimate was \$3,720,000. New estimate -- \$7,608,000.

* Consumers Public Power District (SGR), Hallam, Nebr. Original estimate was \$25,110,000. Current estimate -- \$50,198,000.

* Yankee Atomic Electric Co. (PWR), Rowe, Mass. Original estimate was \$32,920,000. New estimate -- \$57,517,000.

* Consolidated Edison Company (PWR), Indian Point, N.Y. Original estimate was \$55,000,000. Current estimate \$90,000,000, including R&D.

A number of other case histories could be cited. More than half of the reported projects are costing more than anticipated. Most of the remainder aren't far enough along to provide conclusive comparisons.

High costs are by no means confined to power aspects of the atomic program. A seemingly simple request in the new Atomic Energy Commission budget calls for improved air filters at the Savannah River Plant, South Carolina. Even this safety measure will cost some \$5,000,000. A water line to the Gaseous diffusion plant at Paducah, Ky. is corroded, and it will cost \$810,000 to replace. These too, are "original estimates" and may soon be outdated.

The entire question of soaring costs point up the diverse views on the problem of economically competitive atomic power. One Congressional witness points out that government and industry are actually building far more than atomic power plants -- they are also building atomic power laboratories. At this stage of development, it is argued, the information and experience gained is the true yardstick.

SPACE RESEARCH PATENTS

Watch for the National Aeronautics and Space Administration to publish the first official version of proposed patent policies this week. Industry will be asked for its comments before the regulations become final.

NASA patent policies, adapted from those of the Atomic Energy Commission, have met with widespread industry protest. Critics have charged that they will "eliminate patent incentive" in the aero-space industry. Congress is being asked to revise some of the more hotly-contested provisions.

Congressional action may not be necessary. Indications are that NASA will seek a more liberal interpretation than originally expected. Major change in the new regulations will seek to offset fears that producers of "off the shelf" equipment under NASA contract might be involved in patent squabbles with the Government.

SPACE AGE INDEMNITY: Aircraft Industries Association joins supporters of legislation aimed at protection of aircraft, missiles and spacecraft manufacturers from damage claims which could conceivably wipe out a large corporation. Bill introduced by House Armed Services Committee Chairman Carl Vinson (D) Ga. would limit liability to \$500,000,000 for the Government or a contractor. Subcontractors and suppliers would automatically be covered. Defense contractors, the Association claims, "gamble with bankruptcy each time a major weapon system is tested." Some lawyers believe a company could be held liable for incidents which might occur many years after the contract is completed. The legislation is rated likely to win approval.

X-15 FLIGHTS: The X-15 research plane will be carried aloft for the first time the second week in March, according to present plans. First powered flight is tentatively set for mid-May.

ATOMIC RADIATION HAZARDS

Joint Committee on Atomic Energy opens hearings March 10 on radiation hazards for workers in the atomic industry. Testimony will cover general background, safety measures, education and training programs, and case-histories from private and Governmental atomic installations. Stress will also be placed on possible changes in Federal and State workmen's compensation laws.

Radiation exposure -- "Up to now," a new report to the Committee states, "there has been little, if any, acceptable evidence that chronic exposure to radiation at the levels prescribed since 1934 has resulted in definable or detectable damage. It would appear, but no more than appear, that the permissible exposure levels have always been adequately low from the point of view of specific somatic damage..."

However, the Committee was also advised that future solutions of the radiation protection problem "will have to be based on a risk philosophy, will have to be compromise solutions, and cannot be solved on the basis of scientific evidence alone."

(Complete report available. Free. See Publications Checklist.)

SCIENCE MEETINGS

Library of Congress will publish June 1, 1959 the first issue of a World List of Future International Meetings. The monthly calendar will record all meetings drawing upon three or more nations which are to be held anywhere in the world during the next three years. Whenever possible information on sponsors and the addresses of organizing committees will be included.

The new publication will supersede the National Science Foundation's List of International and Foreign Scientific and Technical Meetings, which ceased publication with the January 1959 issue.

* Subscriptions will be available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. at a price to be announced.

* Notices from organizations are welcomed. Detailed information on future meetings should be sent to the International Organizations Section, General Reference and Bibliography Division, Library of Congress, Washington 25, D. C.

TRANSISTOR EXPORTS

U.S. Bureau of Foreign Commerce is now taking over control of silicon transistor exports. The products were formerly licensed for export only by the Department of State. Silicon transistors require individual licenses for export anywhere in the world, with the exception of Canada. Licenses issued by the State Department will remain valid.

SURPLUS SCIENCE EQUIPMENT

So much surplus scientific equipment is available without charge to schools, colleges and universities that the Government has had to go to unusual lengths to inform educators about the program. About \$100 million is available each year, but educational institutions are only receiving about 20 percent.

What is available? Welfare Secretary Arthur S. Flemming says the equipment ranges all the way from push buttons for second graders to jet airplanes for engineering students. It includes nautical and navigation instruments; radio and radar equipment; electric motors and generators; photographic equipment; spectrometers; laboratory items and supplies, including chemicals; lenses, and electronic items and components.

How may equipment be obtained? State surplus property agencies inform the Government how much equipment is likely to be needed. The items are then transferred to state warehouses. Schools simply make their selections, paying only storage or transportation costs.

Who receives equipment? When the states fail to ask for equipment it is then advertised to the public. In many cases surplus property dealers purchase the equipment from the Federal Government and then sell the same items to schools.

(Details available from Information Office, HEW, Washington 25, D.C.)

RESEARCH CHECKLIST

() New Bombing Computer: Preliminary results indicate a "significant" improvement in accuracy is obtainable through a new Level Bombing Wind Offset Computer developed by the Air Force as supplementary equipment to the standard bombing navigation system in B-47 and B-52 strategic bombers. The 24-pound device compensates for differential ballistic wind -- the variation between the wind at bomber's altitude and the winds a bomb passes through during its fall to target. Engineering model used in field tests was constructed by Control Instrument Co., Brooklyn, N.Y.

() New Interferometer: Simple and direct measurements of flatness are said to be possible with a new interferometer developed by the National Bureau of Standards. The instrument is believed to have important applications wherever the flatness and regularity of surfaces must be determined with precision, such as in the layout plates used in production of aircraft components and machinery. It permits quick checks of surface quality and may also provide a means of production control.

(Details available free. Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C. for Summary Tech. Report No. 2315.)

() Flame Inhibition: Investigations sponsored by the Army Engineer Research and Development Laboratories involve the detailed mechanism of chain-thermal ignition. A report to the Army suggests a mechanism involving a sequence of chemical reactions characterized by an inhibition chain in which the effective inhibitors are the halogen atoms and halogen acids.

(Report available. Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 131797. 25 pages. \$1.00.)

() Space Vehicle Coatings: Studies at the Naval Research Laboratory include a research program to develop suitable coatings for space vehicles. One phase of the program involves the effects of ultraviolet radiation on typical polymeric coatings in the air. These coatings may be used to control the adsorption and emission of radiant energy but must be physically and chemically stable to high-altitude environments. Initial experiments indicate that infrared spectroscopy may be used to follow chemical changes induced by the ultraviolet.

(Details from Chemistry Division, Naval Research Laboratory, Washington 25, D.C.)

() Isotope Research: National Bureau of Standards has developed new radioactive sugars using tritium, the radioactive isotope of hydrogen, as a tracer element. The use of tritium for labelling purposes has been retarded because of the need for expensive equipment. However, the Bureau has developed a new method of analysis using the relatively inexpensive Geiger-type counter. A curie of tritium costs only \$2, the Bureau points out, compared with \$22,000 for a curie of Carbon 14. No expensive shielding precautions are required.

() Glazing material research: Studies sponsored by the Navy Bureau of Aeronautics are directed toward glazing materials with improved temperature resistance for aircraft canopies and other applications. The possible use of plastic laminates as an outer thermal barrier has been investigated with the aid of a new procedure for fracture-strength measurement and analysis.

(Details from Ballistics Branch, Naval Research Laboratory, Washington, 25, D.C.)

() Transistor Research: Studies sponsored by the U.S. Air Force have led to a process said to permit the continuous preparation, fractionation and decomposition of silane to produce 2 - 15 gram quantities of high purity, transistor grade silicon. Yields of 94 to 100 percent silane were obtained by the reduction of silicon tetrachloride with various hydrides.

(Report available. Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 131 875. 60 pages. \$2.)

() Molybdenum Chlorides: Studies supported by the U.S. Army indicate that the tri- and tetrachlorides of molybdenum can now be easily prepared in the laboratory. Neither chloride can be obtained commercially. However, new laboratory procedures involve reactions with molybdenum pentachloride, which is commercially available. Good yields are said to be obtainable under recommended temperature and pressure conditions.

(Report available. Free. Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C. for Summary Tech. Report No. 2303.)

() Atomic Fuel Elements: Atomic Energy Commission believes that important applications may arise from a concerted effort now underway to determine the mechanism which produces swelling of Uranium under irradiation. An understanding of this process may lead to methods for increasing irradiation stability of metallic uranium. AEC reports that these investigations, together with possible use of high strength cladding, and the search for improved radiation resistant Uranium alloys, could eventually lead to increased use of metallic Uranium fuel elements.

() Turbine Research: The coal industry's Locomotive Development Committee is lending the U.S. Bureau of Mines its direct-fired, coal burning turbine developed through 12 years of research at a cost of more than \$5½ million. The turbine will be used to determine changes which might qualify such equipment for use in stationary electric powerplants. It is also being considered for the generation of power in arid regions of the West, since no water is required for operation.

(Details from Information Service, U.S. Bureau of Mines, Washington 25, D.C. Ask for P.N. 50774.)

PUBLICATIONS CHECKLIST

- () National Academy of Sciences, a catalog of the Academy's publications. Dated Fall, 1958 and issued this month. 79 pages. Free. (Write National Academy of Sciences, Publications Office, 2101 Constitution Avenue, Washington 25, D.C.)
- () National Science Foundation, a brief listing of published reports, brochures and information pamphlets. Free. (Write National Science Foundation, Information Office, Washington 25, D.C.)
- () Strengthening American Science, a casual study by the President's Science Advisory Committee on the state of U.S. science and technology. 36 pages. 20 cents. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for Pub. No. Pr 34.8:Sci 2/2.)
- () Synthetic Rubber, a Senate Subcommittee report described as "A case study in technological development under Government direction." 130 pages. 35 cents. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for Pub. No Y 4.j 89/2 P 27/3 No. 18)
- () Space Science, a lecture by Dr. Homer E. Newell, Assistant Director for Space Sciences of the National Aeronautics and Space Administration on the general subject "Launching of Satellites and Space Probes." 20 pages. Free in limited quantities. (Write Information Office, NASA, 1520 H Street, N.W., Washington 25, D.C. for Space Science Lecture No. 3.)
- () Space R&D, a speech by Albert F. Siepert, Director of Business Administration, NASA, on R&D Opportunities for industry in space. A useful guide. 12 pages. Free in limited quantities. (Write Information Office, NASA, 1520 H Street, N.W., Washington 25, D.C.)
- () Drugs and Performance, material prepared for a 1958 symposium dealing with the effects of drugs on human performance. Includes an annotated bibliography and a critical view of experimental variables. 90 pages. \$2.25. (Write OTS, U.S. Department of Commerce, for PB 131 917.)
- () Synthetic Gas, a research report on a new and improved process for the removal of unwanted carbon dioxide from synthesis gas. (Available for inspection only at Bureau of Mines, Pittsburgh, Pa. and Library, U.S. Department of Interior, Washington, D.C.)
- () Organic Scintillators, a short bibliography of sources of information on organic scintillators and their applications. 28 pages. \$1. (Write OTS, U.S. Department of Commerce, Washington 25, D.C. for Pub No. LA 2265.)
- () Radiation Hazards, a well-organized compilation of materials and reports on radiation hazards and workmen's compensation. From official and private sources. 327 pages. Free. (Write Joint Committee on Atomic Energy, F-88, The Capitol, Washington 25, D.C.)

